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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,859	09/17/2001	Bernd Heinemann	7040-30	2690

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EXAMINER

NGUYEN, TUAN H

ART UNIT PAPER NUMBER

2813

DATE MAILED: 07/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/857,859

Applicant(s)

HEINEMANN ET AL.

Examiner

Tuan H. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite since it does not positively recite the process steps.

In claims 1, lines 4-5; claim 8, line 3; claim 14, line 6, " buffer layer can be deposited" is indefinite since it is unclear as whether the buffer layer is deposited or not;.

In claim 1, line 6; claim 8, line 5, "the effective emitter zone" lacks antecedent basis.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting

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directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 8, 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Koscielniak et al..

See Koscielniak et al., figs. 1-16 and related text on col. 4-10 which discloses the claimed method for forming a bipolar transistor structure including the steps of producing on a monocrystal substrate 200 a collector region 201, 202 and insulation region 204 surrounding the collector region (fig. 1, col. 4, last two paragraphs); producing a base layer 205-1 and a cap layer 205-2 over the collector region by epitaxy (fig. 2, col. 5, second to fourth paragraphs); depositing an insulation layer 207-1, 207-2 over the cap layer 205-2, the insulation layer opened in an area of an effective emitter zone (fig. 12, col. 9, second paragraph); and depositing and structuring a polysilicon layer 292 over the opened insulating layer 207 and using this layer as a source of emitter doping agent and as a contact layer (figs. 15-16, col. 9, last two paragraphs); wherein a doping profile is introduced into the cap layer 205-2, the profiled being low doped on a base side thereof and high doped on an emitter side thereof (col. 5, lines 44-48).

With respect to claim 13, bottom part of the base layer 205-1 is considered as a buffer layer.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-7, 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koscielniak et al.

Koscielniak et al., figs. 1-16, and text on col. 4-10 discloses substantially the claimed method for producing a bipolar transistor as explained above, including a doping profile is introduced into the cap layer 205-2, the profile ranges from approximately  $2 \times 10^{18}/\text{cm}^2$  at an upper surface of layer 205-2 to approximately  $1 \times 10^{17}/\text{cm}^2$  at a lower surface of the layer 205-2 and the layer 205-2 has a thickness ranging from about 700-1400 angstroms (col. 5, lines 44-50).

Koscielniak et al. lacks anticipation of using different techniques for doping the cap layer as claimed in claims 5-7, or the base side lower doping concentration of the cap layer as claimed in claims 2, 9, or the dopant type for the emitter-side cap layer as claimed in claims 4, 11.


It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used either implantation, diffusion or in-situ doping processes for introducing dopant in the cap layer since they are well-known techniques in the semiconductor processing art, and selected a suitable dopant type, concentration for obtaining an optimum result.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is 703-308-2550. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

  
Tuan H. Nguyen  
Primary Examiner  
Art Unit 2813

TN  
July 14, 2003